

# Axiomatic analysis of liability problems with rooted-tree networks in tort law

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**Abstract:** We analyze a legal situation in which a plaintiff suffers the total damage of the cumulative injury that is caused by multiple sequences of tortfeasors' wrongful acts. This liability situation is modeled by a tuple consisting of a rooted-tree network of causation of the injury, and a list of marginal damages. The problem is to determine how to share the total damage among the tortfeasors in such situations. A rule is a mapping that associates with each liability problem a list of payments to be made by the tortfeasors to pay for the plaintiff's harm. We axiomatize two rules that are obtained as the Nucleolus and the Shapley value, respectively, of a coalitional game with tortfeasors as players. The axioms involved in these axiomatizations are derived from the legal concept of tort law.

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